Alabama Poison Information Center

2024

Annual Report

Prepared by

LaDonna Gaines

Jessica Pescatore

Brian Whitworth

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About the APIC

The APIC has been a long-term commitment of Children's of Alabama to the citizenry of Alabama since 1958. The APIC was the 14th center established in the United States, during a time period when serious morbidity and mortality were attributed to poison ingestion in children and adults. Since its inception, the center has provided the most accurate and rapid poison information, initially to physicians only in the early years and then to both professionals and the general public. The APIC provides free and confidential lifesaving information 24/7/365. The specialists in poison information (SPIs) who answer the APIC hotline are nurses and pharmacists trained in toxicology and are nationally certified. The APIC is a fully accredited poison center by the American Association of Poison Control Centers and serves the entire state of Alabama as the only accredited statewide center designated by the Alabama Department of Public Health.

Children's of Alabama®

ALABAMA POISON INFORMATION CENTER
800-222-1222

POISON HELP™
1-800-222-1222

Children's of Alabama, Blue Cross Blue Shield of Alabama Caring Foundation, the Alabama Department of Education, the U.S. Department of Health and Human Services/Health Resources and Services Administration, and the Alabama Department of Public Health provide operational and educational support for the Alabama Poison Information Center.

Administrative Director

LADONNA GAINES

DNP, MPH, RN, CSPI

As I began to prepare the 2024 Annual Report for the Alabama Poison Information Center (APIC), I found myself filled with immense gratitude and joy. 2024 was a year of immense change for the APIC, as our longtime beloved Director, Ann Slattery, retired after 41 years. We welcomed Jessica Pescatore as our new Clinical Director. In this role, she oversees the clinical toxicology component for the center, as well as the Clinical Toxicology Fellowship Program. And I transitioned to the Administrative Director role, where I oversee operations and fiscal matters.

Even with all of those changes, we had an amazing year. We welcomed our first Pitts Blue Cross Blue Shield Clinical Toxicology Fellow, we traveled for professional and public education events all over the state, we started working towards offering Advanced Hazmat Life Support (AHLS) Courses, a program we have not offered in several years, amongst many other wonderful things for the people of Alabama. We continued our robust education programs that ranged from pharmacy students, to medical and pharmacy residents, to public health interns. We instituted quarterly “Tox Talks” where invited experts in the field of toxicology presented on complex topics.

On top of all of that, our wonderful staff continued doing the most important work, helping our fellow Alabamians in their poison exposure and information needs. We have an amazing crew of Specialists in Poison Information (SPIs) nurses and pharmacists and Poison Information Providers (PIPs) that are dedicated and have great passion for assisting our callers. We like to acknowledge all of the hard work with celebrations as much as possible. This year we celebrated Poison Prevention Week, Nurses’ Week, and Pharmacy Week, all while celebrating individual wins, such as passing the Certified Specialist in Poison Information Exam. I look forward to continuing this wonderful work.

Clinical Director

JESSICA PESCATORE
PHARMD, DABAT

As we reflect on the past year at the Alabama Poison Information Center (APIC), it is with great pride that I share my first full year in the role of Clinical Director. This year has been marked by invaluable opportunities for growth. One of the most notable changes has been the establishment of distinct Clinical and Administrative Director roles within our leadership structure. This change has been instrumental in allowing us to better balance our clinical responsibilities with the operational demands of running a regional poison center, ensuring that we continue to deliver expert care and timely responses.

Our focus remains on providing the highest level of care through our 24/7/365 emergency poison helpline. This critical service continues to handle cases of high-acuity and complexity, underscoring the essential role we play in the healthcare system. We remain committed to antidote stewardship and the implementation of efficient triage methods, striving to reduce healthcare costs and alleviate strain on our medical infrastructure.

Several guidelines and treatment protocols were developed and updated in response to the latest scientific literature, ensuring that we provide the most current, evidence-based care possible. This allows us to offer safe home monitoring when appropriate, helping to manage cases more efficiently and prevent unnecessary hospital admissions. At the same time, we maintain a strong focus on data accuracy, which serves not only to guide our clinical decisions but also facilitates public health surveillance efforts. This commitment to precision enables us to contribute valuable insights to both state and national toxicological research.

In 2024, our team made significant strides in advancing the field through scholarly activity. Several of our abstracts were accepted for presentation at national conferences, and members of our team provided professional lectures to audiences across the country. A significant rise in exposures to GLP-1 receptor agonists, medications that are now widely used for weight management, presented a unique challenge. These medications, while beneficial for many patients, have shown a potential for significant adverse effects when misused or overdosed. In response, we took proactive steps to stay ahead of the curve by publishing our experiences with GLP-1 RA exposures, contributing to the broader body of knowledge in this area. This publication underscores our commitment to clinical excellence and our ongoing efforts to monitor and address emerging trends.

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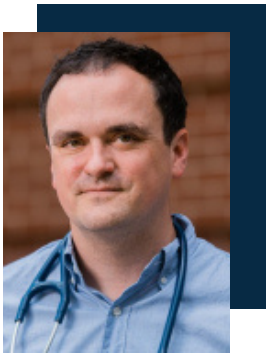
A key area of growth for APIC has been our involvement in the specialized pharmacy training programs in Alabama. As the primary site for comprehensive toxicology education, we are proud to support pharmacy trainees who will carry the knowledge and experience they gain at APIC back to their respective institutions. By doing so, we are helping to improve their ability to provide safe, effective, and efficient care, strengthening the state's healthcare system as a whole. 2024 also marked the inaugural year of our Clinical Toxicology Fellowship program, a significant step in providing specialized training to help increase the number of board-certified toxicologists.

Collaboration remains at the heart of our work. We continue to foster strong partnerships with key stakeholders, including the Alabama Department of Public Health (ADPH). This year, we co-authored a number of press releases helping to educate and engage Alabama constituents. Most recently, a letter to the editor in a prominent medical journal was accepted for publication, highlighting the value of collaboration and synergy between poison centers and public health entities. This letter exemplifies our shared commitment to public health education and outreach.

Despite the incredible advances and accolades we've achieved this year, what I am most proud of is the amazing team at APIC. Our center is made up of individuals who consistently show up authentically and passionately for the people of Alabama. In the face of daily challenges in our ever-evolving field, our staff has also navigated leadership changes, shifts in staffing models, weather disruptions, technology updates, rising standards, and personal challenges. Through it all, they have done so with grace, dedication, and an unwavering commitment to excellence. It is their resilience, adaptability, and genuine care that truly make our center what it is, and they are, without a doubt, the most inspiring part of the work we do. I am deeply honored to be a part of this remarkable team and incredibly grateful for the support we receive from our partners.

In summary, 2024 has been a year of growth, innovation, and dedication. We remain committed to delivering exceptional care through our helpline, advancing the field of toxicology through research and education, and strengthening partnerships that enhance public health outcomes across the state. We look forward to another year of shared growth, progress, and service to our community.



Medical Director

WILLIAM RUSHTON

MD, FACEP, FACMT

The Alabama Poison Information Center (APIC) has experienced an exceptionally successful year, marked by significant growth in clinical operations, research, and educational initiatives. Our center continues to build on its role as a critical resource for medical toxicology services across the state of Alabama, providing expert care, education, and research in poison management.

Clinical Operations

APIC's direct patient care has expanded considerably within Children's of Alabama and University of Alabama Birmingham, enhancing our capacity to provide inpatient consults for critically ill poisoned children and adults. Our physician team has also strengthened its management of snakebite cases, offering comprehensive care and follow-up services, solidifying our reputation as a leader in the field of longitudinal snakebite management. Additionally, APIC's medical toxicologists have partnered with the adolescent physician experts to offer a weekly clinic tailored to adolescents facing substance abuse challenges.

Research and Scholarly Impact

Over the past year, APIC has made significant strides in research, publishing eight scholarly papers in the past 12 months on a variety of important topics within the field of toxicology. These publications range from outpatient snakebite follow-up protocols to the management of anti-hyperglycemic agents. Our center's expertise in GLP-1 toxicity, delta-8 poisoning, and snakebite management has positioned us as a recognized leader in these areas.

Education and Training

APIC remains committed to advancing medical education in toxicology, offering month-long medical toxicology courses that were attended by more than 20 physicians and 5 pharmacists throughout 2024. These educational initiatives not only benefit our local medical community but also extend to regional, state, and national audiences through lectures and presentations.

A Vital Statewide Resource

APIC provides 24/7 phone coverage for medical toxicology consultations throughout the state of Alabama, offering critical expertise in the management of poisoning cases. Whether in the emergency department, intensive care unit, or in outpatient settings, APIC's medical toxicologists are available to assist healthcare providers statewide, ensuring that every poisoned patient receives the best possible care.

By the Numbers

Total Calls

In 2024, the APIC handled 108,927 calls.

- **50,684** Incoming calls resulting in **36,200** cases
  - **33, 204** human exposures
  - **2,031** information calls
  - **965** animal exposures
- **58,243** follow-up calls

Monitoring and Age Range

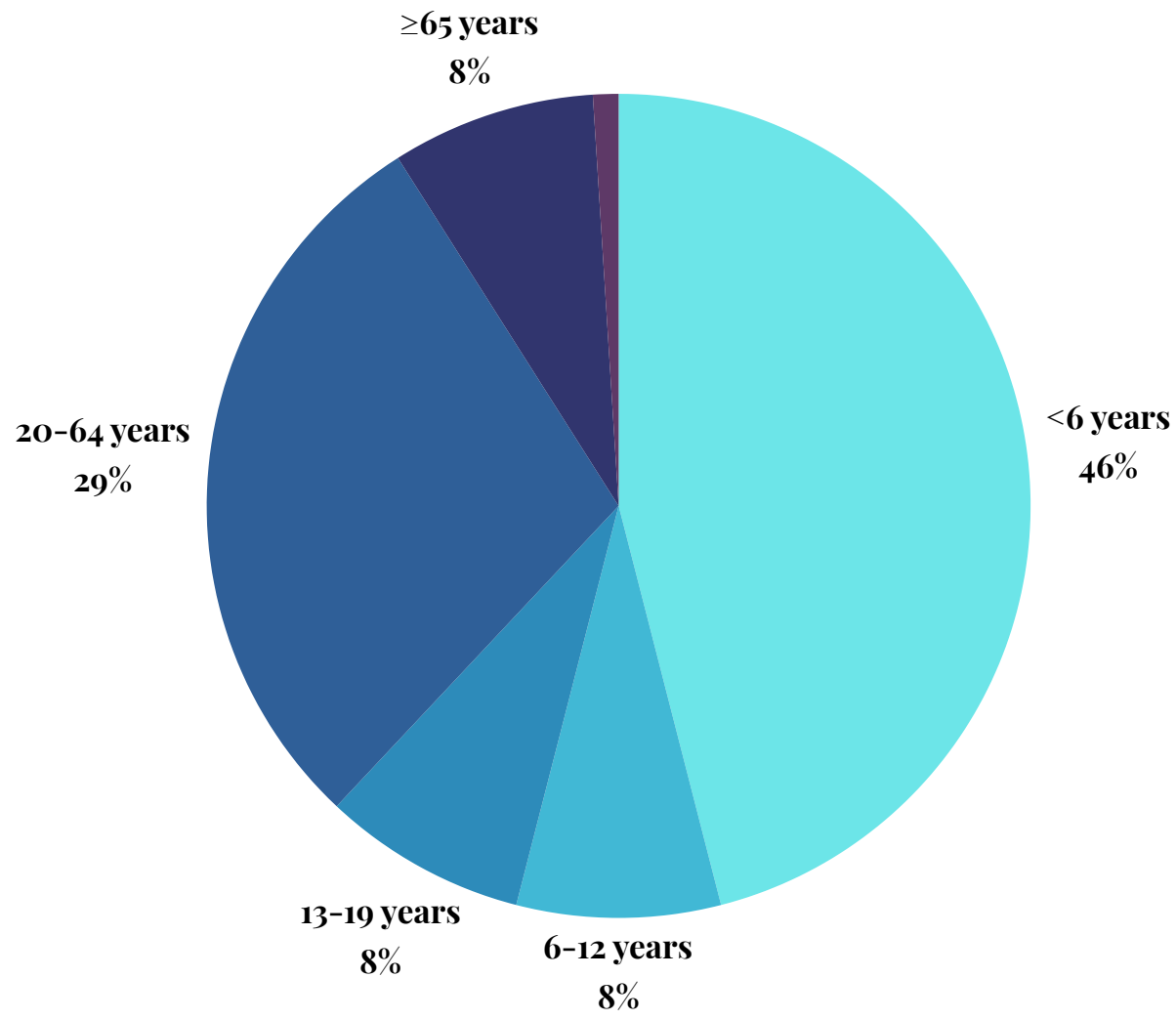
The APIC monitors 87% of poison exposure calls from home/school/work on site. In children <6 years old, >92% are monitored at home/onsite rather than being referred to a healthcare facility.

The APIC is available to patients of all ages. In 2024, the Center managed calls on patients that ranged from 2 days to 100 years old.

By the Numbers

Call Volume by Age

<6 years	15,353
6-12 years	2,576
13-19 years	2,734
≥20	12,288
Unknown	253



Top Substances

Top 10 Substances in Pediatric Exposures in Alabama*

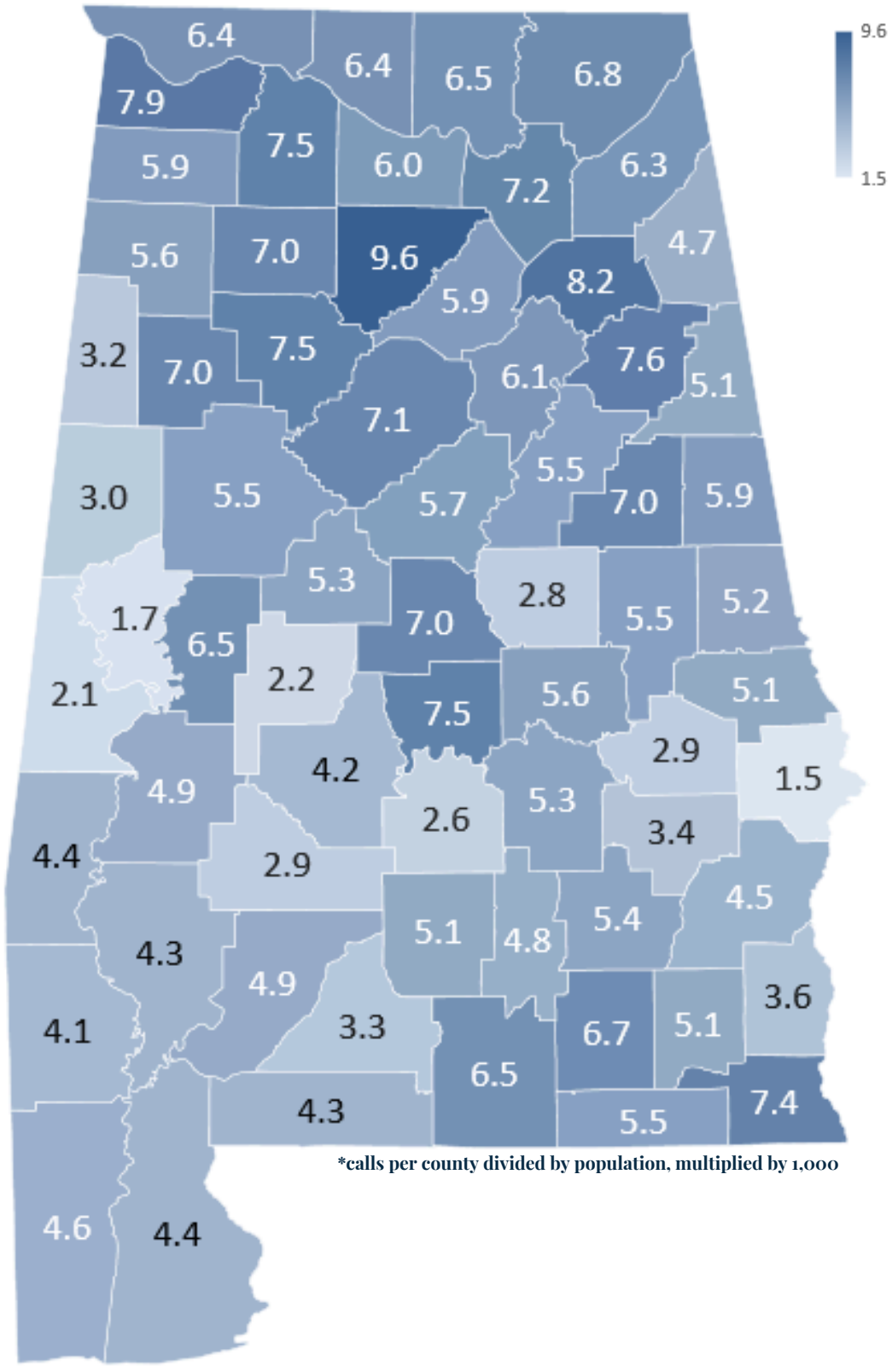
1. Cleaning Products
2. Cosmetics
3. Analgesics
4. Dietary Supplements
5. Foreign Bodies
6. Antihistamines
7. Pesticides
8. Vitamins
9. Topicals
10. GI Preparations

Top 10 Substances in Pediatric Exposures in the US*

1. Cleaning Products
2. Cosmetics
3. Analgesics
4. Foreign Bodies
5. Dietary Supplements
6. Vitamins
7. Antihistamines
8. Topicals
9. Pesticides
10. Plants

*Pediatric patients less than 6 years of age

Calls Per County per 1,000 Residents



*calls per county divided by population, multiplied by 1,000

APIC Patient Satisfaction Survey

1374 Responses	**If the Poison Center was not available, home callers (that were monitored at home) would have called or visited their:**
Physician	37%
Emergency Department	36%
911	17%
Other healthcare provider, friend/family, or tried to find information on the internet	10%

You couldn't ask for nicer people than those that work there. I was acting goofy and worrying over nothing really and they calmed me down and followed up with a sweet phone call tonight. Very nice people.

This was my first time calling, and it was the BEST experience. I was so worried about calling, but the person who helped me was very kind and helpful. I will definitely call again in the future if needed.

What a tremendous blessing it is to have someone to call in situations like so. Getting to actually speak with someone is wonderful and to have them call back periodically is so wonderful. God bless you guys and thank you again for being a highly skilled and compassionate team. 💙✝️💛🌹💚

The [specialist] was friendly, most helpful, thoughtful and caring. You are truly blessed to have her in your employment.

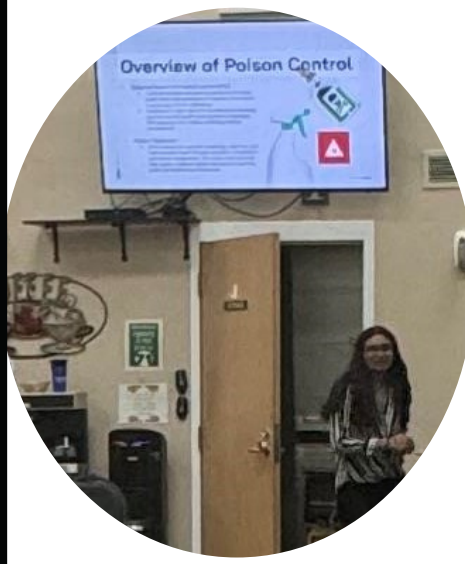
She was very knowledgeable and helped put me at ease. And I was absolutely shocked with the call back. It shows that you really do care about the folks that call in. I am so grateful for your time and help!

Such nice and knowledgeable people, so calm and friendly. You always take the poison control center for granted until you need them.

Learners

In 2024 the APIC hosted 13 PharmD candidate rotators, 2 PGY2 Pharmacy Residents, and 2 MPH Interns. The rotation involves many activities, including researching and presenting information about toxic substances, trips to the Birmingham Zoo to see snakes native to Alabama, and taking calls in the Poison Center. Four PharmD students completed the Current Topics in Toxicology elective at the McWhorter School of Pharmacy.

We also provide a medical toxicology elective to senior medical and pharmacy students and residents. The course focuses on care of the poisoned patient through direct bedside consultations at UAB and COA, daily review of APIC cases, didactics focusing on critical care toxicity, simulations in managing the intoxicated patient, and regional field trips to identify poisonous plants, mushrooms, and snakes of Alabama. Faculty is multidisciplinary with expertise in pharmacology, toxicology, hyperbaric medicine, wilderness medicine, and international medicine. In the current academic year, 20 EM medical residents and 5 pharmacy EM residents completed the course.

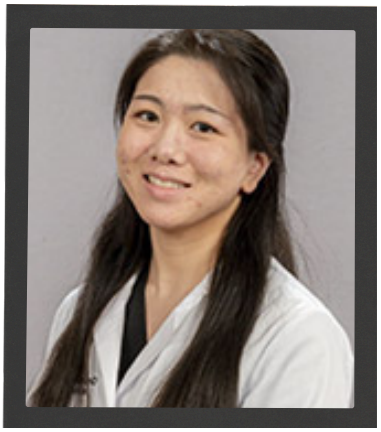


Community Health Events and Conferences

In 2024 the APIC participated in 168 hours of community health events, engaging with the public and distributing poison information to > 5,600 Alabamians. Along with Healthy Child Care Alabama (HCCA) the APIC provided 2,193 poison prevention programs reaching a total of 11,966 parents throughout all 67 counties. HCCA nurses distributed 12,221 poison prevention items provided by the APIC.

The APIC also attends the North American Congress of Clinical Toxicology and the Poison Center Leadership Meeting annually.

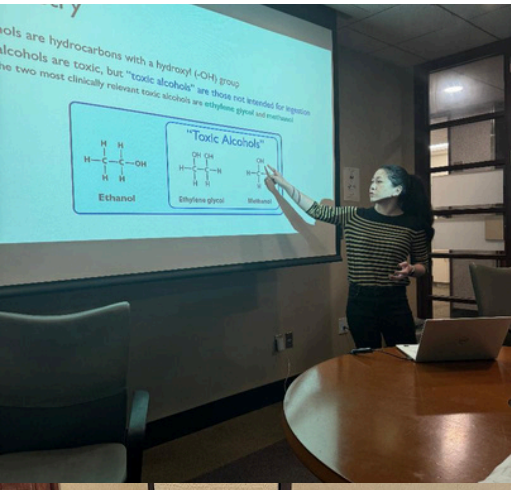
Our First Clinical Toxicology Fellow
Tiana Patriarca, PharmD

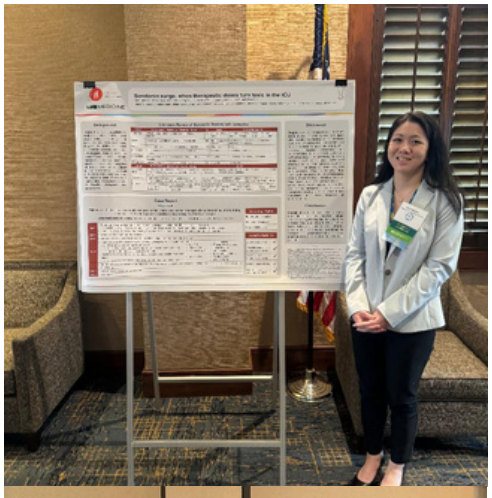


Halfway through this year as the first clinical toxicology fellow with the Alabama Poison Information Center, I am so grateful to have this opportunity to train with and learn from so many fantastic and experienced experts in this field! Working daily with the SPIs and toxicologists at APIC has been a truly valuable experience as I work towards developing the knowledge and skills necessary to care for poisoned patients.

Outside of the day-to-day didactic and patient care activities, I am also so excited to have had so many additional opportunities this year, from going to a national toxicology conference this past September, learning about Alabama's venomous snakes up close and in person at the Birmingham Zoo, teaching lectures at a local pharmacy school, and representing APIC in local community events such as Babypalooza and Trick or Treat in the Suites at Protective Stadium.

I look forward to the next half of the year and am so excited for whatever new opportunities the fellowship with APIC will have in store!

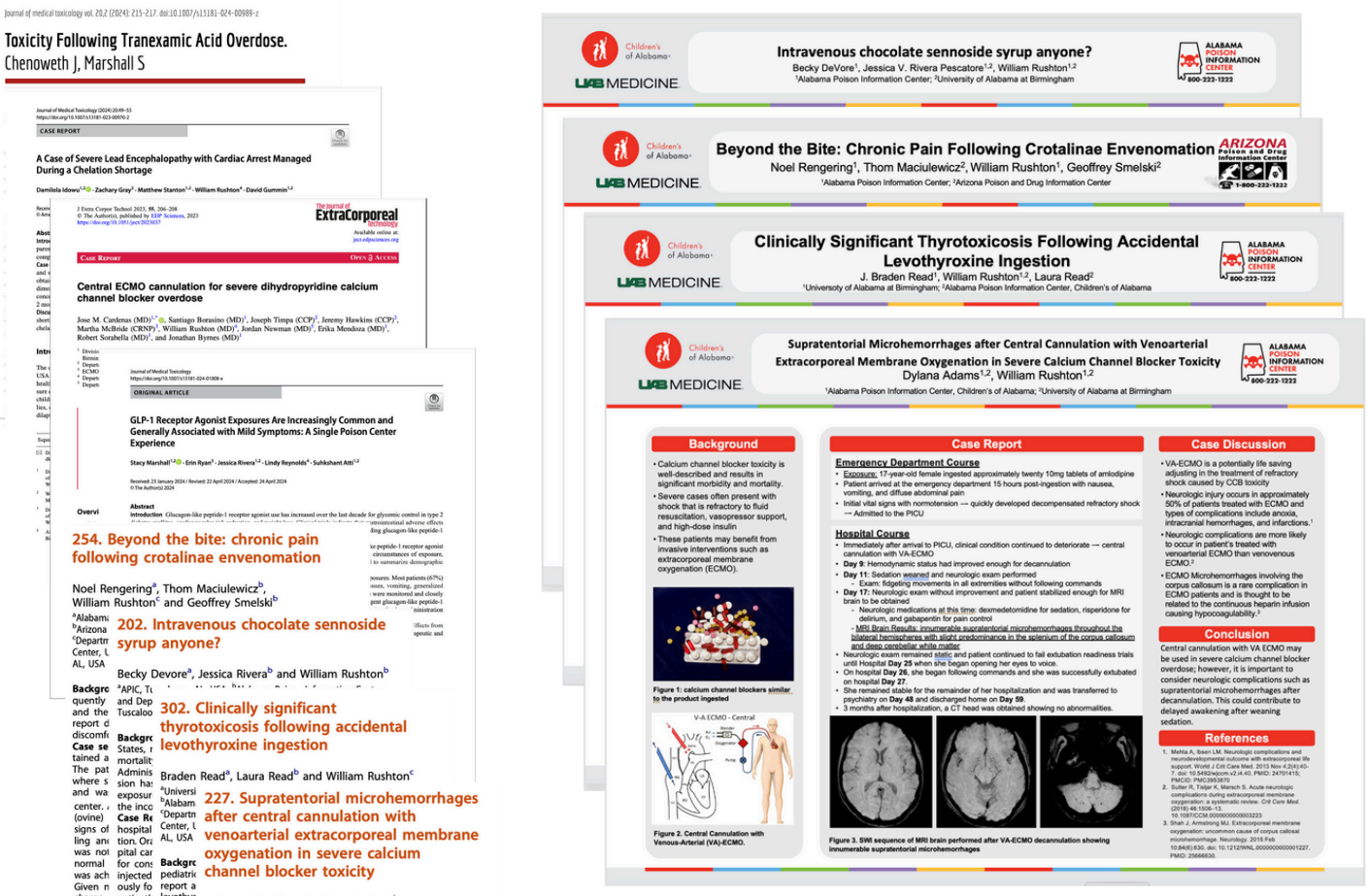




Our Fellowship Program is made possible by the Pitts Family and Blue Cross Blue Shield of Alabama

Publications

In 2024 APIC data was published in several scientific journals along with abstracts, posters, and presentations throughout the year across North America and Europe.



Toxicity Following Tranexamic Acid Overdose.
Chenoweth J, Marshall S

A Case of Severe Lead Encephalopathy with Cardiac Arrest Managed During a Chelation Shortage

Central ECMO cannulation for severe dihydropyridine calcium channel blocker overdose

GLP-1 Receptor Agonist Exposures Are Increasingly Common and Generally Associated with Mild Symptoms: A Single Poison Center Experience

254. Beyond the bite: chronic pain following crotalinae envenomation

Noel Rengering[a], Thom Maciulewicz[b], William Rushton[c] and Geoffrey Smelski[b]

202. Intravenous chocolate sennoside syrup anyone?

Becky Devore[a], Jessica Rivera[b] and William Rushton[b]

302. Clinically significant thyrotoxicosis following accidental levothyroxine ingestion

Braden Read[a], Laura Read[b] and William Rushton[c]

227. Supratentorial microhemorrhages after central cannulation with venoarterial extracorporeal membrane oxygenation in severe calcium channel blocker toxicity

Dylana Adams[a] and William Rushton[b]

[a]Department of Emergency Medicine, University of Alabama, Tuscaloosa, AL, USA; [b]Alabama Poison Center, Birmingham, AL, USA

Background: Calcium channel blocker toxicity is well-described and results in significant morbidity and mortality. Severe cases often present with shock that is refractory to fluid resuscitation, vasopressor support, and high-dose insulin. These patients may benefit from invasive interventions such as extracorporeal membrane oxygenation (ECMO). We report a case of calcium channel blocker toxicity refractory to vasopressor support that was successfully treated with central VA ECMO but complicated by supratentorial microhemorrhages.

Case report: A healthy 17-year-old female ingested approximately twenty 10mg tablets of amlodipine. She arrived at the emergency department 15 hours post-ingestion with nausea, vomiting, and diffuse abdominal pain. Initial vital signs showed normotension, but she quickly decompensated developing refractory shock; thus, the decision was made to place her on VA ECMO with central cannulation. She remained cannulated for 9 days before her hemodynamics improved and she was decannulated. At hospital day 11, sedation had been weaned enough to evaluate her neurologic status and her exam consisted of fidgeting movements in all extremities without following commands. Her exam remained consistent despite decreasing polypharmacy through hospital day 17 and she had stabilized enough to obtain neuroimaging. An MRI brain was obtained which demonstrated innumerable supratentorial microhemorrhages throughout the bilateral hemispheres with slight predominance in the splenium of the corpus callosum and deep cerebellar white matter. At this point, her sedation regimen included dexmedetomidine and only other neurologic medications were risperidone for delirium and gabapentin for pain control. As her neurologic examination remained static, she continued to fail extubation readiness trials. She began opening her eyes to voice on hospital day 25, following commands on hospital day 26, and was successfully extubated on hospital day 27. She continued to improve throughout her hospital course and was stable for transfer to psychiatry on hospital day 48. At time of hospital discharge on hospital day 59, patient had returned to her neurologic baseline. A follow-up CT head obtained 3 months after discharge did not demonstrate any abnormalities.

Discussion: Our case highlights one of the potential adverse effects of VA ECMO use in the setting of calcium channel blocker overdose. Neurologic injury occurs in approximately 50% of patient's treated with ECMO and types of complications include anoxia, intracranial hemorrhages, and infarctions. Neurologic complications are more likely to occur in patient's treated with venoarterial ECMO than venovenous ECMO. ECMO microhemorrhages involving the corpus callosum is a rare complication in ECMO patients and is thought to be related to the continuous heparin infusion causing hypocoagulability. Further consideration should be given to possible neurologic complications in patients with delayed awakening during sedation wean or the development of new focal neurologic deficits.

Conclusions: Central cannulation with VA ECMO can increased survivability in severe calcium channel blocker overdose; however, it is important to consider neurologic complications such as supratentorial microhemorrhages after decannulation. This could contribute to delayed awakening after weaning sedation.

KEYWORDS
Calcium channel blocker; ECMO; neurologic injury

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Intravenous chocolate sennoside syrup anyone?
Becky DeVore[1], Jessica V. Rivera Pescatore[1,2], William Rushton[1,2]
[1]Alabama Poison Information Center; [2]University of Alabama at Birmingham

Beyond the Bite: Chronic Pain Following Crotalinae Envenomation
Noel Rengering[1], Thom Maciulewicz[2], William Rushton[1], Geoffrey Smelski[2]
[1]Alabama Poison Information Center; [2]Arizona Poison and Drug Information Center

Clinically Significant Thyrotoxicosis Following Accidental Levothyroxine Ingestion
J. Braden Read[1], William Rushton[1,2], Laura Read[2]
[1]University of Alabama at Birmingham; [2]Alabama Poison Information Center, Children's of Alabama

Supratentorial Microhemorrhages after Central Cannulation with Venoarterial Extracorporeal Membrane Oxygenation in Severe Calcium Channel Blocker Toxicity
Dylana Adams[1,2], William Rushton[1,2]
[1]Alabama Poison Information Center, Children's of Alabama; [2]University of Alabama at Birmingham

Background
- Calcium channel blocker toxicity is well-described and results in significant morbidity and mortality.
- Severe cases often present with shock that is refractory to fluid resuscitation, vasopressor support, and high-dose insulin
- These patients may benefit from invasive interventions such as extracorporeal membrane oxygenation (ECMO).

Case Report

Emergency Department Course
- Exposure: 17-year-old female ingested approximately twenty 10mg tablets of amlodipine
- Patient arrived at the emergency department 15 hours post-ingestion with nausea, vomiting, and diffuse abdominal pain
- Initial vital signs with normotension → quickly developed decompensated refractory shock → Admitted to the PICU

Hospital Course
- Immediately after arrival to PICU, clinical condition continued to deteriorate → central cannulation with VA-ECMO
- **Day 9**: Hemodynamic status had improved enough for decannulation
- **Day 11**: Sedation weaned and neurologic exam performed
  - Exam: fidgeting movements in all extremities without following commands
- **Day 17**: Neurologic exam without improvement and patient stabilized enough for MRI brain to be obtained
  - Neurologic medications at this time: dexmedetomidine for sedation, risperidone for delirium, and gabapentin for pain control
  - MRI Brain Results: innumerable supratentorial microhemorrhages throughout the bilateral hemispheres with slight predominance in the splenium of the corpus callosum and deep cerebellar white matter
- Neurologic exam remained static and patient continued to fail extubation readiness trials until Hospital **Day 25** when she began opening her eyes to voice.
- On hospital **Day 26**, she began following commands and she was successfully extubated on hospital **Day 27**.
- She remained stable for the remainder of her hospitalization and was transferred to psychiatry on **Day 48** and discharged home on **Day 59**.
- 3 months after hospitalization, a CT head was obtained showing no abnormalities.

Figure 1: calcium channel blockers similar to the product ingested

Figure 2. Central Cannulation with Venous-Arterial (VA)-ECMO.

Figure 3. SWI sequence of MRI brain performed after VA-ECMO decannulation showing innumerable supratentorial microhemorrhages

Case Discussion
- VA-ECMO is a potentially life saving adjusting in the treatment of refractory shock caused by CCB toxicity
- Neurologic injury occurs in approximately 50% of patients treated with ECMO and types of complications include anoxia, intracranial hemorrhages, and infarctions.[1]
- Neurologic complications are more likely to occur in patient's treated with venoarterial ECMO than venovenous ECMO.[2]
- ECMO Microhemorrhages involving the corpus callosum is a rare complication in ECMO patients and is thought to be related to the continuous heparin infusion causing hypocoagulability.[3]

Conclusion
Central cannulation with VA ECMO may be used in severe calcium channel blocker overdose; however, it is important to consider neurologic complications such as supratentorial microhemorrhages after decannulation. This could contribute to delayed awakening after weaning sedation.

References

1. Mehta A, Ibsen LM. Neurologic complications and neurodevelopmental outcome with extracorporeal life support. World J Crit Care Med. 2013 Nov 4;2(4):45-7. doi: 10.5492/wjccm.v2.i4.40. PMID: 24701415; PMCID: PMC3953870
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toxins
Antivenom Administration After Rattlesnake Envenoming in Arizona Does Not Directly Diminish Pain

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Alkali exposure: an evidence-based approach to diagnosis and treatment.
Atti S, Behrndt J, Hereford A.

Repeat antivenom administration following crotalidae immune F(ab')2 antivenom in Agkistrodon species: a case series

TOXICOLOGY

Navigating the Rise of GLP-1 RA Exposures: What Emergency Physicians Need to Know

Harm Reduction Journal
Xylazine co-occurrence with illicit fentanyl is a growing threat in the Deep South: a retrospective study of decedent data

After the bite: evaluating a specialized clinic for follow-up care for snake envenomation

Antidysrhythmic Toxicity and Poisoning

TOXICOLOGY

Snake Envenomation Follow-Up Clinic Expands Frontiers of Emergency Medical Care

APIC in the Media

Interviews:

Talk of Alabama - National Poison Prevention Week

CBS42 - National Poison Prevention Week

Death from 'gas station heroin' users being renewed fears for parents, medical experts

Online Newsrooms:

Children's of Alabama Online Newsroom - National Poison Prevention Week

UAB Snakebite Information

Alabama Pediatrician: Let's Talk Cannabidiol Ingestions With Dr. Jessica Pescatore

Alabama Pediatrician: Snakes! Spiders! Oh My! An Affair of Envenomations!

Barely Legal: Some officials in Alabama want to outlaw delta-8. Others want to make it safer

Articles:

NBC News: CDC warns that Neptune's fix - 'gas station heroin' - may contain synthetic pot

Poison Prevention Week: Products Containing Delta-8 THC

Alabama Poison Information Center Wraps Up National Poison Prevention Week

What is Tianeptine? The Dangers of Gas Station Drugs

Children's of Alabama Blog - Instructions Not Included - Summer Food Safety

APIC Media Mentions:

WVTM 13 - Child Health Alert

Poison Center Reauthorization - Start at Minute 35

Tuberville bill to reauthorize poison control centers passes Senate unanimously

Tuberville's Poison Control Centers Reauthorization Act of 2024 Signed into Law

Taking Time to Celebrate and Have Fun

We celebrate milestones and events, such as staff anniversaries, passing of the certification exam, poster presentations, Nurses and Pharmacists Weeks, and National Poison Prevention Week. We also take some downtime as a team.

How You Can Find and Reach Us

800-222-1222

apic@childrensal.org

www.childrensal.org/APIC

@ALPoisonInfoCen

Children's of Alabama®

ALABAMA POISON INFORMATION CENTER 800-222-1222

POISON HELP™ 1-800-222-1222